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ORDNANCE PAMPHLET 1234
(PRELIMINARY)

**ONE-HUNDRED POUND
INCENDIARY BOMB AN-M47A2
(ALL-PURPOSE)**



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29 JULY 1944

*This publication is RESTRICTED and will be handled in accordance with
Article 76, United States Navy Regulations, 1920*

NAVY DEPARTMENT, BUREAU OF ORDNANCE,
WASHINGTON, D. C.

29 July 1944.

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ORDNANCE PAMPHLET 1234 (PRELIMINARY)

ONE-HUNDRED POUND INCENDIARY BOMB AN-M47A2-(ALL PURPOSE)

1. Ordnance Pamphlet 1234 (*PRELIMINARY*) is designed to furnish instructions for the handling, shipping, stowage, assembly, and use of the one-hundred pound (100 lb.) Incendiary Bomb AN-M47A2 (All-Purpose).
2. Because of the urgent need for information, this Ordnance Pamphlet has been issued in *PRELIMINARY* form. It will be revised and issued in complete, final form as soon as practicable.
3. This pamphlet does not supersede any existing publication.
4. This publication is *RESTRICTED* and should be handled in accordance with Article 76, U. S. Navy Regulations, 1920.

G. F. HUSSEY, Jr.
Rear Admiral, U. S. Navy
Chief of the Bureau of Ordnance.



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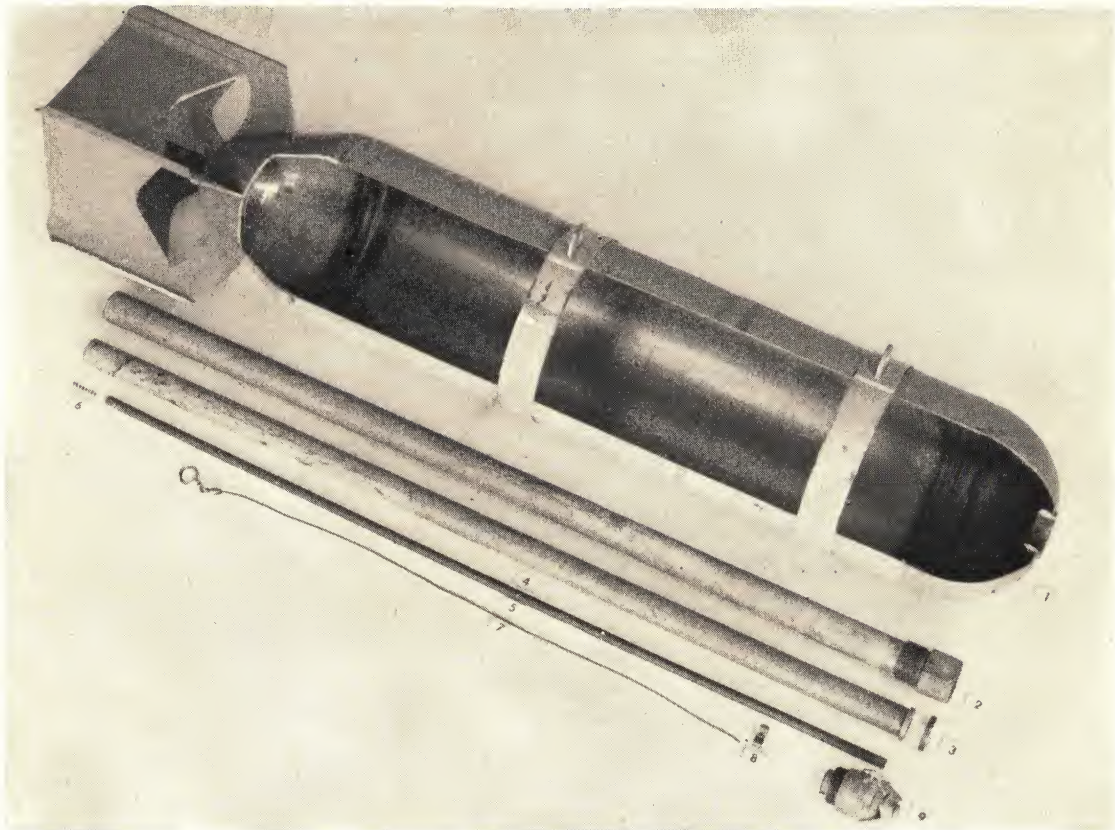


FIGURE 1.—Components of 100-pound Incendiary Bomb AN-M47A2 (all purpose).

- | | |
|---|--|
| 1. Bomb Body. | 5. Burster, 100-pound Incendiary Bomb, AN-M13. |
| 2. Burster Well. | 6. Spring. |
| 3. Retainer Ring. | 7. Arming Wire. |
| 4. Igniter, 100-pound Incendiary Bomb, AN-M9 or E2. | 8. Fahnestock clip. |
| | 9. Fuse, AN-M126A1. |

ONE-HUNDRED POUND INCENDIARY BOMB AN-M47A2

(All Purpose)

1. PURPOSE

This pamphlet provides instructions for the handling, shipping, stowage, assembly and use of the 100-pound Incendiary Bomb AN-M47A2 (all-purpose).

2. GENERAL INFORMATION

The 100-pound Incendiary Bomb AN-M47A2 (all-purpose) consists of a 100-pound Bomb Body AN-M47A2 filled with IM or NP gel, equipped with a Burster AN-M13 and an Igniter AN-M9 (white phosphorous) filled or an Igniter E2 sodium-filled, and an instantaneous functioning, air-arming, Nose Fuze AN-M126A1. When the bomb is released from the aircraft, the arming wire is withdrawn and the arming vanes of the fuze are free to rotate. After 725 feet of air travel the fuze is fully armed. Upon impact the striker overcomes the creep spring and strikes the detonator, exploding the burster which ignites and scatters the gel filling over a circular area of approximately 30 yards radius. When the Igniter E2 sodium-filled is used in the Bomb AN-M47A2, the explosion of the burster forces the sodium filling in the igniter into the gel and insures ignition of the gel on either land or water. If the igniter AN-M9 WP-filled is used in the Bomb AN-M47A2 the scattering and ignition of the gel takes place, but ignition of the gel on water is not insured.

3. USES

(a) The 100-pound Incendiary Bomb AN-M47A2 (all-purpose) is designed for use against combustible land targets where large and numerous fires will cause serious damage, and for use over water to ignite oil slicks.

(b) The types of land targets against which the 100-pound All-purpose Incendiary Bomb is designed to be effective includes warehouses, factories, docks, storage dumps, barracks and residential and industrial structures. Because the Incendiary Bomb AN-M47A2 can be

dropped with much greater accuracy than can be achieved with quick-opening incendiary bomb clusters, it is more useful than quick-opening incendiary clusters against isolated targets or targets of small area.

(c) When ships are damaged in a harbor or when oil storage tanks near a harbor are damaged, oil slicks are formed which are frequently of sufficient thickness to be ignited and to burn intensely. When the bomb AN-M47A2, equipped with the sodium filled igniter E2 impacts on the target it bursts and scatters burning gobs of incendiary gel containing particles of sodium. These gobs of gel will float and the sodium will spontaneously ignite in contact with water, thereby insuring the ignition of inflammable oil slicks. If the all-purpose incendiary bomb AN-M47A2 penetrates the surface of a wooden dock or pier and bursts below the dock, the incendiary gel will continue to burn in spite of the water present.

4. BALLISTICS

Ordnance Pamphlet Number 1123 "Bombing Tables for Incendiary Bomb, 100-pound M47A1 and AN-M47A2" contain the ballistic data for this bomb. The ballistic coefficient for the 100-pound Incendiary Bomb AN-M47A2 is 0.9.

5. SPECIAL PRECAUTIONS FOR THE FUZE AN-M126A1

The Fuze, Bomb, Nose, AN-M126A1 lacks certain desirable safety characteristics, because this fuze, although air vane arming, is constructed with the firing pin in line with the detonator. If the Bomb AN-M47A2 equipped with this fuze is dropped nose down onto a hard surface from a height of several feet or more, the fuze, though unarmed, is liable to detonate the burster because the fuze body can be crushed sufficiently to force the firing pin into the detonator of the fuze.

The Fuze AN-M126A1 may be used in the Bomb AN-M47A2 by both land-based and

carrier-based Naval aircraft providing that the fuze is installed in the Bomb AN-M47A2 only after the bomb has been installed in the aircraft, and providing that all Bombs AN-M47A2 equipped with Fuzes AN-M126A1 are jettisoned before landing.

6. COMPLETE ROUND ASSEMBLY

The complete round assembly for the 100-pound all-purpose Incendiary Bomb AN-M47A2 consists of the following components:

1. Bomb, Incendiary, 100-pound AN-M47A2 Incendiary Oil-filled NP (or IM) (figure 1 piece 1)—with burster well (figure 1 piece 2) installed and burster well cavity plugged with a cork.

2. Igniter,* 100-pound, Incendiary Bomb AN-M9 (WP filled) or Igniter, 100-pound, Incendiary Bomb E2 Sodium-Filled (figure 1 piece 4) with spring (figure 1 piece 6) installed.

3. Burster,* 100-pound, Incendiary Bomb AN-M13 (figure 1 piece 5).

4. Ring, Retainer, for 100-pound Incendiary Bomb AN-M47A2 (figure 1 piece 3).

5. Arming Wire Assembly (figure 1 pieces 7 and 8).

6. Fuze, Bomb, Nose, AN-M126A1 (figure 1 piece 9).

7. BOMB BODY

The Incendiary Bomb Body AN-M47A2 is 46 inches long and 8 inches in diameter (see figure 1). The body is made of $\frac{1}{16}$ " lap-welded steel and is threaded at the nose to take an axial burster well which extends to the tail of the bomb body. A sheet steel box-type tail assembly is welded to the bomb body. With the burster well installed, the bomb empty weighs approximately twenty-six (26) pounds. Two suspension bands of sheet steel, each equipped with a suspension lug, circumscribe the bomb body. When filled and assembled with fuze, burster AN-M13 and Igniter AN-M9 ready for dropping, the bomb weighs approximately 70 pounds.

8. INCENDIARY FILLINGS

Two types of incendiary fillings are used interchangeably in the all-purpose Incendiary Bomb

*The Burster, 100-pound Incendiary Bomb, AN-M12 may be substituted for these two components for land use.

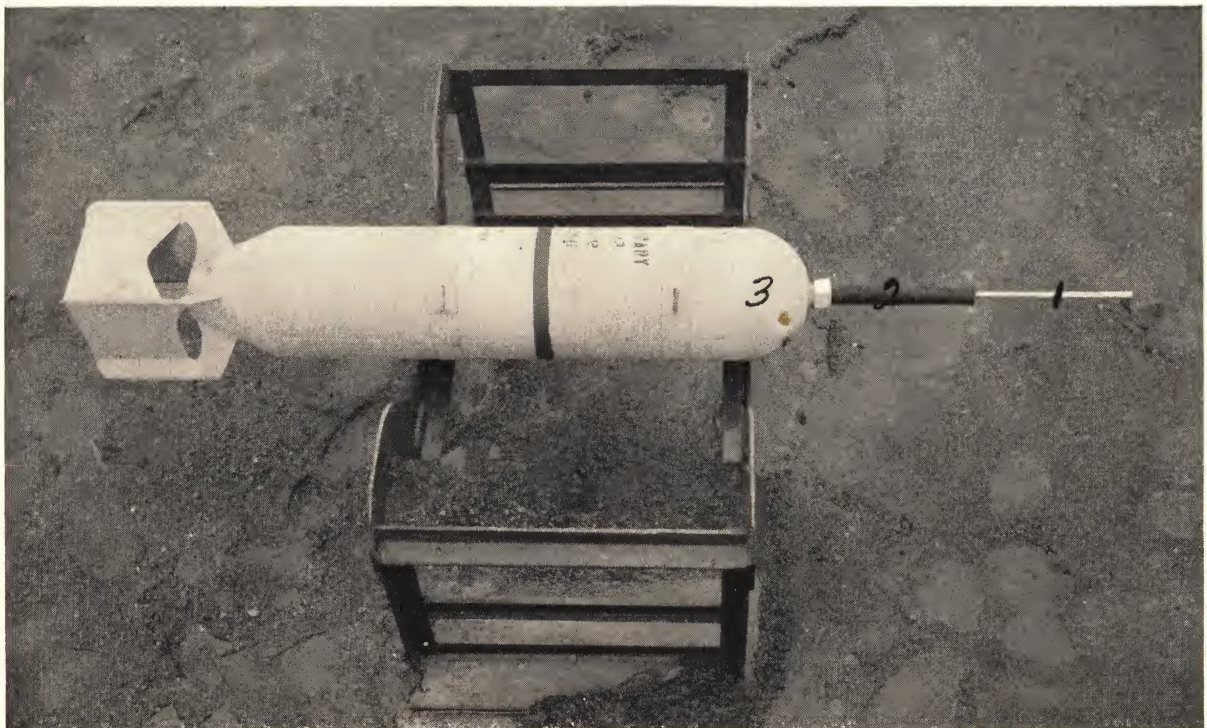


FIGURE 2.—View of 100-pound Incendiary Bomb AN-M47A2 Showing (1) Explosive Burster, (2) Igniter Tube, (3) Bomb Body.

AN-M47A2. There are Napalm (NP) and Isobutyl Methacrylate (IM). The Bomb AN-M47A2 is loaded with 41 pounds of either of these incendiary fillings.

(a) Oil, Incendiary, Napalm, Type I (NP) is a mixture of 88.5% gasoline and 11.5% Napalm thickener.

(b) Oil, Incendiary, Isobutyl Methacrylate, Type I (IM) is a mixture of 88.75% gasoline, 5% Isobutyl Methacrylate, 3% Stearic Acid, 2% Calcium Oxide and 1.25% water.

Burning gobs of incendiary gel from the all-purpose Incendiary Bomb AN-M47A2 will produce a temperature of from 500 to 675 degrees centigrade at a height of three inches above the flame over a maximum period of approximately 8 minutes.

9. BURSTER AND IGNITER FOR 100-POUND INCENDIARY BOMB AN-M47A2

The Igniter, 100-pound Incendiary Bomb, AN-M9 and Igniter, 100-pound Incendiary Bomb, E2 are essentially two concentric steel tubes joined at both ends to form an annular space which is filled with 2.2 pounds of WP in the igniter AN-M9 or 0.7 pounds of sodium in the Igniter E2. The inner tube is screwed into a threaded adapter in the fuze end of the outer tube. The inner tube is seated on a lead gasket in the adapter to seal the annular space and prevent leakage of the sodium. The Burster, 100-pound Incendiary Bomb, AN-M13 is a plastic tube 36" long and $\frac{5}{16}$ " in diameter, which is filled with 57.5 grains of TNT and equipped with a .41 grain tetryl pellet at each end. A small coil spring is placed in the bottom of the inner tube in the igniter before the explosive burster is installed in order to insure firm contact between the explosive burster and the fuze.

The Burster, 100-pound Incendiary Bomb, AN-M12 may be used in place of the Igniter AN-M9 and the Burster AN-M13 in the Bomb AN-M47A2 for land use. The Burster AN-M12 is a tube 39½" long and 1⅜" in diameter which contains 450 grams of a 50-50 mixture of black powder and magnesium powder. The magnesium powder in this mixture serves to insure ignition of the gel when the burster explodes. No spring is used in installing the

Burster AN-M12 in the burster well of the bomb AN-M47A2.

10. FUZE, BOMB, NOSE AN-M126A1

The Fuze, Bomb, Nose AN-M126A1 is a propeller-arming instantaneous impact fuze. This fuze requires 725 feet of air travel to arm. This fuze, when used in the Incendiary Bomb AN-M47A2, is safe for take-offs only for both land-based and carrier-based aircraft, with the provisions noted in paragraph 5.

11. ASSEMBLY OF BOMB AN-M47A2

Bombs AN-M47A2 as assembled rounds, with either Bursters AN-M12 or with Bursters AN-M13 and Igniters AN-M9 or E2 installed, will not ordinarily be kept on hand except in sufficient quantities to meet immediate requirements. Any assembled complete rounds in excess of such requirements should be disassembled, inspected, and restored to their original packings.

12. INSPECTION OF COMPONENTS PRIOR TO ASSEMBLY

Before assembling the 100-pound Incendiary Bomb AN-M47A2, the following steps should be carried out:

(a) Inspect the suspension lugs and the fin assembly for alignment, straightness and security of attachment to the bomb body.

(b) Remove the nose shipping plug and cork nose stopper from the bomb body.

(c) Inspect all mating parts, including the fuze, fuze cavity, burster well, igniter tube and explosive burster. Threads must be clean and all surfaces must be free of foreign matter.

13. INSTALLATION OF BURSTER

The Burster, M13, and Igniter AN-M9 or E2 are assembled to the Incendiary Bomb AN-M47A2 as follows:

(a) Insert the Igniter AN-M9 or E2 all the way into the burster well in the bomb until the lead cup holder seats against the shoulder in the fuze adapter. No force is to be used.

(b) Screw the retainer ring (figure 1, piece 3) into the fuze adapter to insure a tight fit of the igniter.

(c) Place the small spring (figure 1, piece 6) at the bottom of the inside of the igniter tube.

(d) Insert the explosive burster AN-M13 into the igniter tube.

The Burster, M12 is installed in the Bomb AN-M47A2 simply by inserting it into the burster well until it seats on the bottom of the well.

14. INSTALLATION OF FUZE AN-M126A1

The Fuze AN-M126A1 is installed in the Incendiary Bomb AN-M47A2 as follows:

(a) Thread the arming wire through the front suspension lug and then through the inner eyelets in the arming wire guide. The bomb is now ready to be installed in the airplane.

(b) *After the bomb is installed in the airplane,* the Fuze, Bomb, Nose, AN-M126A1 is screwed into the nose of the bomb, hand-tight, until it seats. *Use no tools.*

(c) Thread the arming wire through the arming tab on the vane of the fuze and adjust the wire to protrude four inches beyond the vane.

(d) Slip two safety clips (Fahnestock connectors) over the arming wire and push them up to the arming wire tab on the vane of the fuze.

(e) Remove the seal wire from the fuze.

15. DISASSEMBLY

Should it be necessary to disassemble the complete round, the steps listed above in the assembly of the complete round should be carried out in reverse order. All parts should be returned to their original packings. The fuze should be inspected and resealed before repacking.

16. SUSPENSION AND HOISTING

The Bomb AN-M47A2 may be suspended from any two hook or single hook bomb racks and shackles. All lugs should be carefully checked to insure that they do not bind either on the hooks or any part of the rack or shackle on which they are installed.

For suspension from single hook racks or shackles, one suspension band is removed and the remaining band loosened, slid up to approximately the center of gravity of the bomb and then retightened.

This bomb may be readily hoisted into position by hand as the nominal loaded weight is approximately 70 pounds. Unless double hook bomb racks are in good operating condition, the 70-pound weight of the AN-M47A2 bomb

may not always be sufficient to insure free or complete release.

17. PAINTING, MARKING AND PACKING OF COMPONENTS FOR BOMB AN-M47A2

(a) *Painting and Marking*—The body of the 100-pound Incendiary Bomb AN-M47A2 is painted blue-grey. All marking and lettering on the bomb is in purple lacquer enamel or water-proof purple ink. The bomb has a 1-inch wide purple band, denoting incendiary filling, five and one-half inches before the rear suspension band. The words "100-POUND INCENDIARY BOMB AN-M47A2" are printed in one-inch letters beginning one inch abaft the forward suspension band. Immediately abaft this lettering is "BURSTER AN-M13" and "NP FILLING" (or "IM FILLING") in three-fourth inch letters. One-half inch before the rear suspension band in one-half inch letters is the lot number, date of loading, and the identification mark of the loading facility.

(b) *Packing for Shipment*—The 100-pound Incendiary Bomb AN-M47A2 is shipped unfuzed and without igniter burster or arming wire in a wooden box, one bomb to a box. The dimensions of the box are $9\frac{3}{16}" \times 10\frac{1}{2}" \times 50\frac{3}{16}"$. The shipping box is marked with the same information which is on the bomb body. The markings on the shipping box are for the identification of the material, and to comply with interstate Commerce Commission Regulations. If incendiary bomb shipping containers are repainted, they should be marked with a facsimile of the original markings.

The Igniters AN-M9 and E2 are packed one hundred to a wooden box.

The Burstern AN-M13 are packed one hundred to a wooden box. The total weight of a box of bursters is approximately 45 pounds.

Fuzes, Bomb, Nose, AN-M126A1, are packed twelve to a cardboard carton and four cartons to a wooden box. The dimensions of the box are $11\frac{3}{16}" \times 9\frac{3}{16}" \times 23\frac{1}{16}"$. The total weight of the box and contents is 80 pounds.

Arming wire assemblies are shipped in individual water-proof envelopes, 100 envelopes, to a carton, six cartons to a wooden box. The dimensions of the wooden packing boxes may

vary. The approximate weight of the box and contents is 75 pounds.

18. HANDLING AND STOWAGE

(a) **Handling.**—The 100-pound Incendiary Bomb AN-M47A2, the Burster AN-M12, the Burster AN-M13, and the Fuze, Bomb, Nose, AN-M126A1 have satisfactorily withstood tests simulating the handling which they are normally expected to receive during loading, shipment, unloading, and in stowage. However, these components can easily be damaged by unnecessarily rough treatment, and therefore, they should be handled with care at all times. The Fuze AN-M126A1 and the explosive burster should be handled very carefully because they contain explosives. The sodium-loaded igniters E2 should be handled very carefully to prevent leakage of the sodium which ignites spontaneously and with great violence when it comes into contact with moisture. Also, the WP-loaded igniters AN-M9 should be handled very carefully to prevent leakage of the white phosphorus which ignites spontaneously when it comes into contact with the atmosphere.

(b) **Stowage.**—The 100-pound Incendiary Bomb AN-M47A2, the Burster AN-M12 or the Burster AN-M13, the Igniter AN-M9, the Igniter E2 and the Fuze, Bomb, Nose, AN-M126A1 should be stowed in accordance with the Bureau of Ordnance Manual and Ordnance Pamphlets Numbers 4 and 5 insofar as possible. The 100-pound Incendiary Bomb AN-M47A2, unfuzed and without burster or igniter, should be stowed in a magazine containing incendiary bombs only. The sodium-loaded igniters E2 and WP-loaded igniters AN-M9 may be stowed together. These items

should be stowed in a high-explosive magazine containing no other items and in a protected area of the ship, or in a locker having adequate accessibility for damage control and located in a protected area of the ship. The Burstern AN-M12 and AN-M13 should be stowed in a high explosive magazine containing TNT Bombs or similar type explosives only. Fuzes AN-M126A1 should be kept in a bomb fuze magazine.

(c) **Fire.**—In the event of fire in a magazine containing Incendiary Bombs AN-M47A2, the fire should be fought with the same equipment and in the same manner as for a gasoline fire. Fire in a magazine containing WP-loaded igniters AN-M9 should be fought with water, wet sand, or carbon dioxide. If air is excluded from the WP it will not burn. WP may be extinguished permanently with a five per cent solution of copper sulfate in water. Fire in a magazine containing sodium-filled Igniters E2 must never be fought with water or foam. Such a fire should be fought with carbon dioxide or chemical extinguishers, such as the carbon tetrachloride type, which do not use water.

19. AVAILABILITY

On new and replacement items initial distribution will be critical and will be made under guidance of the Chief of Naval Operations. Requests through established logistic channels for bombs AN-M47A2 should accordingly indicate the following information:

(a) Estimated quantity required for immediate important operational purposes.

(b) Estimated quantity anticipated for expenditure or installation per month.

(c) Stock level considered desirable to cover contingencies.



FIGURE 3.—Effects of burst of 100-pound Incendiary Bomb AN-M47A2 with Sodium Burster E2 on Water.

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